

St. Marys River Area of Concern
(Canadian section)

**Status of the
Restrictions on Dredging Activities
Beneficial Use Impairment**

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Executive Summary

The purpose of this report is to assess the current status of the *Restrictions on Dredging Activities* beneficial use impairment (BUI) based on the 2015 delisting criterion. This assessment includes:

- i. A summary of the Dredging Administrative Controls Document called for in the delisting criteria;
- ii. An overview of remedial actions and monitoring initiatives recommended in the Stage 2 RAP report;
- iii. Changes to dredging regulations and guidelines with implications to the *Restrictions on Dredging Activities* BUI;
- iv. Status of *Restrictions on Dredging Activities* BUI in Sault Ste. Marie, Michigan; and
- v. Recommendations and conclusions regarding BUI re-designation.

In the 1987 Protocol to the *Canada-U.S. Great Lakes Water Quality Agreement*, the two nations recognized 43 Areas of Concern (AOC) in the Great Lakes Basin; including the St. Marys River. The agreement was renewed in 2012. As part of this agreement, Remedial Action Plans (RAPs) are developed to identify and restore environmental impairments in these areas.

When the St. Marys River was designated as an AOC, ten BUIs were identified for the Canadian and American sides of the river, including *Restrictions on Dredging Activities*. The St. Marys River Stage 1 Remedial Action Plan (RAP) report in 1992 linked the BUI to contaminant levels in sediment exceeding environmental standards. In 2002, the Stage 2 RAP report identified two actions needed to address the *Restrictions on Dredging Activities* BUI on the Canadian side of the AOC:

- Action NPS-1: Develop a multi-agency sediment management program for the river to address immediate dredging needs;
- Action NPS-5: Evaluate sediment quality and quantity in the Algoma Slip to determine need for further dredging.

In 2015, the suite of BUI delisting criteria were finalized for the Canadian side of the AOC, including that for the *Restrictions on Dredging Activities* BUI to account for local circumstances, link to relevant regulations or guidelines, and to be specific, measurable, achievable, relevant, and time-oriented (“SMART”). The *Restrictions on Dredging Activities* BUI delisting criteria is:

This beneficial use will no longer be impaired when administrative controls and other regulatory procedures are in place within the Area of Concern that provide guidance and oversight for dredging proponents and permitting agencies in the planning and undertaking of dredging activities, including mitigating measures to reduce negative impacts. Such guidance will be made clear in a multi-agency Dredging Administrative Controls document that will be part of a broader sediment management plan for the Area of Concern.

In 2016, the *St. Marys River Dredging Administrative Controls Document* was established and disseminated to provide guidance and oversight for dredging proponents and permitting agencies in the planning and undertaking of dredging activities. It directly delivers upon the delisting criteria established for the BUI. The Dredging Administrative Controls document has been actively used by dredging proponents and agencies, and is providing the relevant parties with guidance to abide by the regulations and guidelines governing dredging activities in the St. Marys River.

In addition, a multi-agency Sediment Management Strategy for the St. Marys River AOC is on track to be drafted by December 2019. The Dredging Administrative Controls document is a standalone initiative that will continue to guide dredging proponents. As the delisting criteria states, the dredging guidance it provides will be reflected in the broader Sediment Management Strategy. But with the Dredging Administrative Controls document in place and actively being put into practice, this report will support community engagement and discussion around the delisting criteria having been accomplished, and therefore the recommendation brought forward to change the *Restrictions on Dredging Activities* BUI to not impaired status.

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1.0 Introduction

1.1 *The St. Marys River Area of Concern*

The St. Marys River is a 112km binational waterway that flows through several channels connecting Lake Superior to the North Channel of Lake Huron. The St. Marys River Area of Concern is one of the 43 Great Lakes Areas of Concern identified under the *Great Lakes Water Quality Agreement* (GLWQA) between Canada and the United States. The St. Marys River, as a connecting channel, is one of five AOCs jointly shared by Canada and the United States. An Area of Concern (AOC) is a location with historically significant environmental impairment resulting from activities at the local level. Historical discharges of pollutants from local steel and pulp and paper industries, a tannery and manufactured gas plant, and municipal storm sewers and wastewater treatment plants impaired water quality and contaminated sediment along parts of the St. Marys River (OMOE and MDNR, 1992). In the past, contaminants of concern included polycyclic aromatic hydrocarbons (PAHs), mercury and other heavy metals, and polychlorinated biphenyls (PCBs), which contributed to exceedances of water quality objectives, sediment quality guidelines, fish consumption guidelines and impacted biota (OMOE and MDNR, 1992; EC et al., 2002).

As directed by Annex 1 of the GLWQA, a Remedial Action Plan (RAP) for the St. Marys River was developed collaboratively by Canadian and U.S. partners to address environmental concerns affecting the Ontario and Michigan portions of the river. Implementation of the remedial actions continues.

The Canadian portion of the AOC extends from its head at Gros Cap in Whitefish Bay downstream to St. Joseph Island via Lake George to Quebec Bay in the St. Joseph Channel and downstream to Hay Point on the western shore of St. Joseph Island (Figure 1).

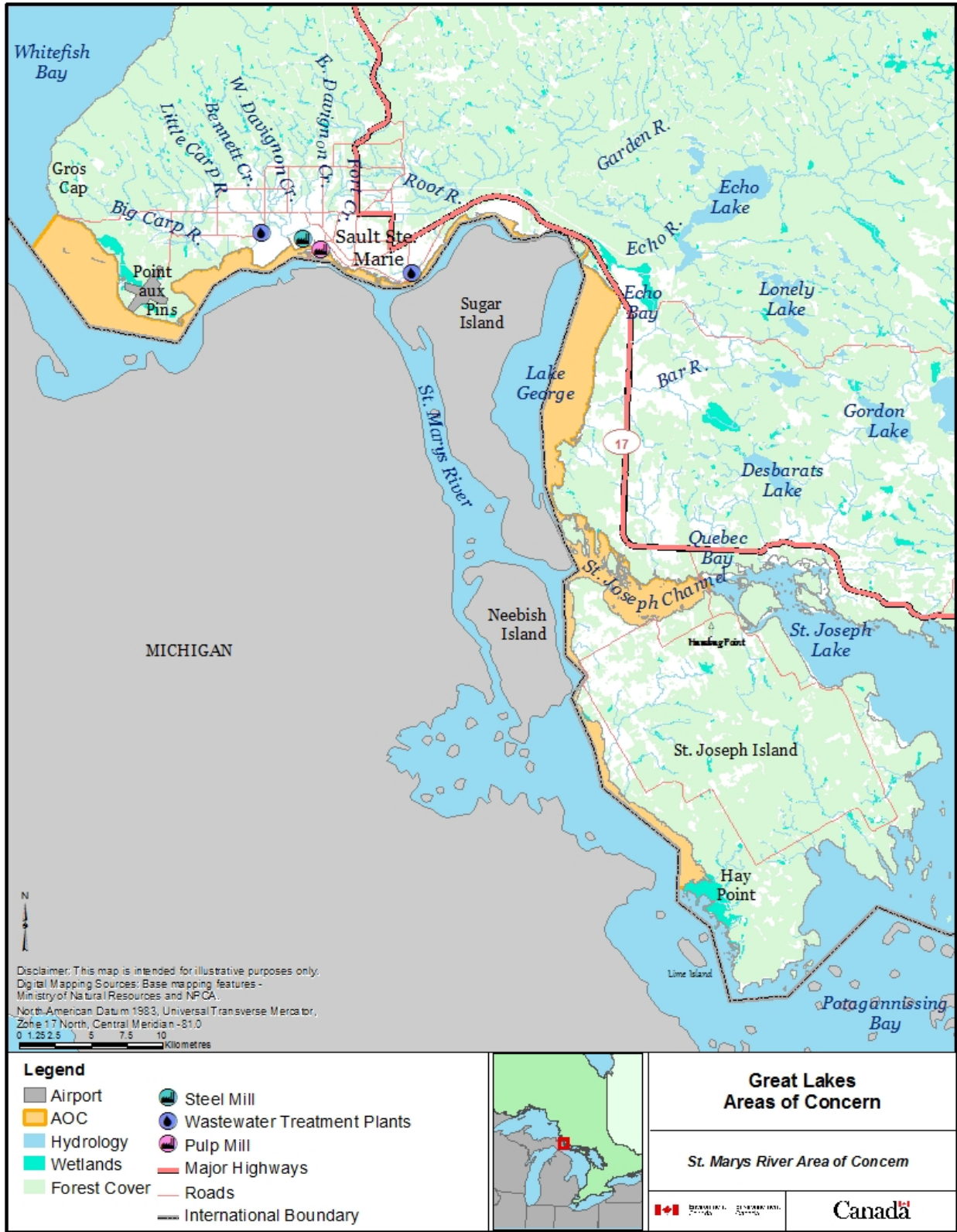


Figure 1: St. Marys River Area of Concern, Ontario, Canada.

The St. Marys River has been an important shipping channel within the Great Lakes for decades. The Stage 1 RAP report (OMOE and MDNR, 1992) highlights the vital role and transformation of the St. Marys River over the last several decades as part of the Great Lakes – St. Lawrence Seaway. The channel is used to deliver coal, lignite, iron ore and limestone from the Great Lakes ports to the steel industry in Sault Ste. Marie, as well as grain through the river from Thunder Bay to the lower Great Lakes and overseas. Since as far back as the late 1700s, the St. Marys River has undergone extensive modifications through the construction of navigational locks and the Compensating Works and dredging of channels in order to facilitate shipping activity. Periodic dredging of sediments over the years was necessary at the St. Marys River, starting with the Lower Lake George and Neebish Channels being dredged in 1857, in order to accommodate for the increasing number and size of vessels navigating the river.

Historically, the St. Marys rapids supported a productive fishery, sustaining permanent and seasonal settlements along the river. Over the last decades, industrial development and European settlement led to significant modifications to the rapids in an attempt to improve navigation and hydropower production. With poor railroad connections and lack of roads in early to mid-1800s, St. Marys River was the only access to Lake Superior. It was in 1855 when a shipping canal and lock was constructed to by-pass the St. Marys River, making navigation possible between Lake Superior and Lake Huron for ships containing ore bound for the eastern United States. Subsequent hydrological changes to the river occurred through dredging of channels to accommodate for the increased traffic and size of ships as the years went on, as well as through the construction of gates at the head of the rapids in order to increase hydroelectric power in the early 1900s. Improved navigation and hydroelectric capacity lead to the development of industries in Sault Ste. Marie. The two dominant industrial activities included steel making with the development of a major mill, Algoma Steel in 1905, and paper manufacturing through St. Marys Paper, both of which are located in Sault St. Marie, Ontario. Discharges from the major point sources, Algoma Steel and St. Marys Paper, as well as non-point sources and smaller industries caused severe water quality degradation and contaminated sediment within the St. Marys River.

1.2 “Restrictions on Dredging Activities” Beneficial Use Impairment

Fourteen Beneficial Use Impairments (BUIs), caused by a detrimental change in the chemical, physical or biological integrity of the Great Lakes system, are used by Canada and the U.S. to identify and evaluate AOCs, and serve as a framework for directing remediation efforts. One of these BUIs, *Restrictions on Dredging Activities*,

refers to restrictions placed on navigational dredging or disposal activities due to contaminant levels in sediment exceeding environmental standards (IJC, 1991). The *Restrictions on Dredging Activities* BUI is focused on contaminated sediment and it applies to specific cases where commercial-navigational dredging is routinely required but is considered “impaired” when contaminants are above concentrations that permit open water disposal (i.e., it cannot exceed limits under the Provincial Sediment Quality Guidelines). It is the additional *financial cost* associated with disposing the contaminated dredgate on land (instead of freely in the open waters) that has been considered the impaired beneficial use.

The *Restrictions on Dredging Activities* BUI was listed as “impaired” in the Stage 1 RAP report because sediments from the following sites contained contaminants that exceeded MECP and/or U.S. Environmental Protection Agency guidelines for the disposal of contaminated sediment:

- Downstream of the Algoma Slag Site along the Ontario shore
- Both sides of the Lake George Channel
- Little Lake George
- Northern half of Lake George
- Michigan shore adjacent to the Cannelton Industries waste site
- The head of the St. Joseph and West Neebish Channels
- Lake Munuscong

The contaminants of concern within the sediment exceeding the guidelines included iron, zinc, cyanide, chromium, lead, arsenic, manganese, nickel, copper, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), loss on ignition (LOI), total phosphorous, oil and grease and Total Kjeldahl Nitrogen (TKN). The major source of these contaminants was local industry, specifically: Algoma Steel and the former St. Marys Paper mill in Ontario, and the former tannery and manufactured gas plant in Michigan. In addition, two municipal wastewater treatment plants in Ontario and one in Michigan were point-source contributors of pollution, and there were several non-point sources of pollution such as urban runoff from the twin cities of Sault Ste. Marie.

In the past, dredged material was often disposed of in open water under the Ontario Ministry of the Environment, Conservation and Parks (MECP) guidelines *for Open Water Disposal of Dredged Spoils*. Open water disposal was a preferred method of managing dredged sediment as the costs were low compared to other disposal options. The dredged material was disposed of within the St. Marys River in a manner that would not affect existing water uses such as navigation.

During the time the Stage 1 RAP report was finalized, the MECP was developing biologically based Provincial Sediment Quality Guidelines (PSQGs) for contaminant concentrations in sediments. The open water disposal of dredged material guidelines were replaced by the *Fill Quality Guide and Good Management Practices for Shore Infilling* in Ontario. The PSQGs provide numeric guidelines for consideration in the application of the *Fill Quality Guide*. Approved in 1993, the PSQGs put restrictions on the quality of dredged sediment (also referred to as dredgeate) that could be placed in open water (Persaud *et al.*, 1993). This document was revised and updated in 1996 (Jaagumagi & Persaud, 1996) and in 2008 (Fletcher *et al.*, 2008). In addition to sediment chemistry, dredgeate grain size (texture) was also a limiting factor as open water disposal was only a viable option if the sediment at the disposal location had a texture similar to that of the dredgeate. Sediment that did not meet these guidelines required an alternative form of disposal most often in a Confined Disposal Facility (CDF) or landfill, which constituted a substantial additional cost to the project.

Today, due to the inherent environmental impacts open water disposal places on local aquatic habitat (i.e., smothering habitat and aquatic biota), the practice is highly discouraged on the Canadian side of the St. Marys River. Given the potential for ecological impacts associated with open water disposal of sediment, viewing this as a “beneficial use” is contrary to the spirit and intent of the AOC program to restore environmental quality and ecosystem health.

As such, new options for the management of dredged sediment have been developed (changes to dredging and guidelines with implications to the BUI are detailed in Section 4.0 below). On-land disposal, which is consistent with the MECP’s *Guideline for Identifying, Assessing, and Managing Contaminated Sediments in Ontario* (Fletcher *et al.*, 2008), of dredge materials is a relatively efficient and low-cost approach and has been the effective, local practice for many years and there are no additional costs associated with dredging in the AOC compared to other locations on the Great Lakes.

1.2 “Restrictions on Dredging Activities” Delisting Criteria

In the Stage 2 RAP report (EC *et al.*, 2002), the *Restrictions on Dredging Activities* BUI continued to be “impaired” as contaminants in sediment remained above the PSQGs. The Stage 2 RAP report detailed the restoration (“delisting”) criteria for all impaired BUIs to guide the development of remedial actions, preventative measures, inform regulatory programs, and to direct monitoring efforts in the AOC. Delisting criteria are unique to each AOC and are derived locally through a collaborative effort between the RAP agencies and the public, represented through the Binational Public Advisory Council

(BPAC) for St. Marys River formed in 1988. For “impaired” BUIs to be re-designated to “not impaired”, the delisting criterion developed specifically for the BUI must be met.

The initial suite of BUI delisting criteria for the St. Marys River AOC were developed in 2002 for the Stage 2 RAP. The *Restrictions on Dredging Activities* BUI delisting criterion stated:

“This beneficial use will no longer be considered impaired when contaminants in dredged sediment do not exceed the standards, criteria, or guidelines that permit open water disposal. These levels are based on sediment concentrations associated with compounds identified within the AOC from local point or non-point sources, and is not based on contributions of new atmospheric deposition of compounds”.

However, these original criteria required revision to reflect current science and the approach to using indicators to measure ecosystem health. As mentioned above, the permitting and practice of open water disposal is discouraged in Ontario, so having that as the basis for the delisting criteria was deemed inappropriate. Delisting criteria that are broad, subjective, or immeasurable make the assessment of ecosystem health difficult. Therefore, in an effort to define meaningful targets, the delisting criteria were updated to follow the SMART test, meaning that they are Specific, Measurable, Achievable, Relevant, and Time-oriented. The updated delisting criteria were endorsed by BPAC on February 25, 2015. The current, updated delisting criterion for the *Restrictions on Dredging Activities* BUI states:

“This beneficial use will no longer be considered impaired when administrative controls and other regulatory procedures are in place within the Area of Concern that provide guidance and oversight for dredging proponents and permitting agencies in the planning and undertaking of dredging activities, including mitigating measures to reduce negative impacts. Such guidance will be made clear in a multi-agency Dredging Administrative Controls document that will be part of a broader sediment management plan for the Area of Concern”.

2.0 Dredging Administrative Controls

The *St. Marys River Dredging Administrative Controls* document (2016) is a tool that provides guidance to proponents considering dredging projects in Canadian waters of the St. Marys River, and encourages coordination and cooperation among the different authorities and government agencies that have a responsibility in the approval, permitting and planning process.

The objectives of the St. Marys River Dredging Administrative Controls are:

- to outline the dredging administrative approach to minimize the disturbance, exposure or re-suspension of contaminated sediment;
- to establish principles that will guide decisions;
- to summarize the roles and responsibilities of the proponent and agencies involved;
- to provide guidance for proponents submitting dredging project applications needing permits; and
- to summarize agency mandates and to promote a common review process for regulatory activities that have the potential to disturb contaminated sediment.

For proponents considering dredging projects, the document provides a list of approvals that need to be obtained, describes the process by which to obtain approval for dredging activities, things to consider before submitting an application and avenues for obtaining additional information.

The St. Marys River Dredging Administrative Controls document satisfies the updated delisting criteria for the *Restriction on Dredging Activities* BUI. That is, it "...provides guidance and oversight for dredging proponents and permitting agencies in the planning and undertaking of dredging activities" as called for in the delisting criteria.

The Dredging Administrative Controls document is a standalone initiative that will continue to guide dredging proponents. As the delisting criteria states, the dredging guidance it provides will be reflected in the broader Sediment Management Strategy. But with the Dredging Administrative Controls document in place and actively being put into practice, this report will support community engagement and discussion around the delisting criteria having been accomplished, and therefore the recommendation brought forward to change the *Restrictions on Dredging Activities* BUI to not impaired status.

3.0 Stage 2 Recommended Remedial Actions

The Stage 2 RAP report outlines a strategy to remediate the impaired beneficial uses in the St. Marys River AOC. It contains descriptions of approximately sixty recommended actions to restore beneficial uses. The Stage 2 RAP report lists two recommendations for the restoration of the *Restrictions on Dredging Activities* BUI on the Canadian side of the AOC, but that the BUI does not depend upon to be accomplished. The two recommendations are:

- i. **Action NPS-1:** Develop a multi-agency sediment management program for the river to address immediate dredging needs; and
- ii. **Action NPS-5:** Evaluate sediment quality and quantity in the Algoma Slip to determine need for further dredging.

3.1 Develop a multi-agency sediment management program for the river to address immediate dredging needs (Action NPS-1)

As described in the Stage 2 RAP report, the most important of all non-point source remediation activities is the development and implementation of a multi-agency Sediment Management Strategy for the St. Marys River AOC. In 2009, ECCC and MECP formed a multi-agency sediment management technical team. This team is in the final stages of developing a draft multi-agency Contaminated Sediment Management Strategy for the Canadian side of the AOC. The process will involve BPAC and community consultation, which began in March 2019 and will continue into 2020.

In 2012, the Sault Ste. Marie Innovation Centre completed a report that describes a Conceptual Site Model (CSM) for sediments in the St. Marys River and includes recommendations to assist in developing the Sediment Management Strategy. The CSM represents the site-specific state of contaminant sources, fate, transport, and potential exposure of receptors. It provides an organized framework for understanding and communicating current conditions relative to the potential for contaminants to interact with humans and the environment in order to aid effective decision-making. The CSM is intended to aid ECCC, MECP and all stakeholders in addressing contaminated sediments in the river (SSMIC, 2012). A new, updated CSM has been drafted by a contractor hired by ECCC to capture recent study results on sediment chemistry, sediment transport and fate modeling, benthic community health and biomonitoring. It will be shared with the public in November 2019. The outcome is expected to lead to one of the following conclusions to assist with the development of a sediment management strategy:

- Sufficient evidence exists to conclude that current conditions in the AOC do not pose a significant risk to human health and/or the environment and therefore further investigation and/or risk management actions are not warranted; or
- Insufficient evidence exists to draw conclusions regarding risks to human health and/or the environment under current conditions and further investigation is warranted to make those conclusions; or

- Sufficient evidence exists to conclude that current conditions pose significant risks to human health and/or the environment and therefore risk management actions are warranted in specific locations (ECCC, 2018).

BPAC and community engagement will continue throughout the winter of 2020, with the objective of having a sediment management strategy developed by the end of March 2020.

Action NPS-1 includes both short and long term activities ranging from the assessment of immediate remedial options to the implementation of management actions. As such, there are ten sub-actions listed in the Stage 2 RAP report that will support the development of the sediment management strategy. These sub-actions are summarized in Appendix B.

3.2 Evaluate sediment quality and quantity in the Algoma Slip to determine need for further dredging (Action NPS-5)

Algoma Steel is a steel manufacturing facility that was originally constructed in the early 1900s on the north shore of the St. Marys River in Sault Ste. Marie, Ontario. The facility is a fully integrated plant having all functions for primary steel production which includes coke, iron, basic oxygen furnace (BOF) steelmaking, casting, hot and cold rolled sheet and plate products (Algoma Steel Inc., 2019). Based upon several sediment surveys of Algoma's boat slip since 1995, it was determined that the sediment had elevated levels of polycyclic aromatic hydrocarbons (PAHs), petroleum hydrocarbons (PHCs), total metals and oil and grease.

The Stage 2 RAP report recommended that the sediment quality and quantity in the Algoma Slip be evaluated from an environmental perspective and remediated as required. This need was addressed in an Environmental Management Agreement (EMA) between Algoma Steel, ECCC and MECP initiated in 2000, which included among its objectives "the delisting of the beneficial use impairment associated with the Algoma boat slip as identified in the Stage 1 RAP report for the Remedial Action Plan for the St. Marys River". As a means to achieve this, Algoma Steel agreed to (a) assess sediment contamination and submit a clean-up plan to the MECP in the form of a semi-annual report, and (b) complete the clean-up and submit a summary report to MECP in its first semi-annual report following completion of the work.

The EMA was a voluntary agreement that complimented the requirements of a regulatory process. A total of 11 semi-annual reports were submitted throughout the 5-

year term of the EMA. The first semi-annual report of the EMA was submitted in February 2001, in which the following was reported in regards to the Algoma boat slip: *“Slip survey and sediment assessment conducted September 2000. Minimal deposition of new sediment since 1995. Sediment quality improved. Dredging clean-up not warranted. Recommended repeat survey and assessment by end of this agreement in 2005.”* This recommended survey and assessment was completed in November 2005. The results of this assessment concluded that, due to the level of contamination, dredging in the north end of the slip was warranted.

The Algoma boat slip was dredged in 1995, 2006, 2017 and 2019 with 11,500m³, 2,630m³, 10,906m³ and XXXXm³ of sediment removed respectively. In order to provide detailed information about contaminant concentrations within the Slip sediments, surveys were conducted in 2005, 2014 and 2018. Consistent in the reports from all three surveys was the fact that the Slip sediment had high concentrations of PAHs. In the two most recent surveys, average concentrations of six PAHs (i.e. fluorine, phenanthrene, anthracene, fluoranthene, pyrene, and chrysene) all exceeded the Severe Effect Level (SEL)¹, while the remaining PAHs all exceeding respective Probable Effect Level (PEL)² or Lowest Effect Level (LEL)³. Total metal concentrations and PHCs were similar in both 2014 and 2018 sampling years, which showed elevated concentrations. More specifically, there were instances of manganese concentrations exceeding sediment SELs. Also, in 79% of the 2018 samples at least one PHC concentration exceeded the soil quality guidelines⁴. Bacteria levels were found to be low and averages for both the total and fecal coliform counts were below those observed in 2014.

Algoma Steel plans to conduct a post-dredge sediment assessment to assess whether there is remaining contamination in the sediment. There are also plans to initiate a hydrogeological survey to investigate potential sources of PAH's on the site and to the boat slip.

¹ Severe Effect Level (SEL) indicates a heavy level of contamination expected to be detrimental to the majority of sediment-dwelling organisms.

² Probable Effect Level (PEL) indicates the concentration above which instances of adverse biological effects are frequently observed.

³ Lowest Effect Level (LEL) indicates a clean to marginally polluted level of contamination that can be tolerated by the majority of sediment-dwelling organisms.

⁴ Ministry of the Environment (MOE). 2011. Soil, ground water and sediment standards for use under Part XV.1 of the Environmental Protection Act. PIBS#7382e01. <http://www.mah.gov.on.ca/AssetFactory.aspx?did=8993>

4.0 Changes to Dredging and Guidelines with Implications to the *Restriction on Dredging Activities* BUI

The Provincial Sediment Quality Guidelines in 1993, together with the St. Marys Dredging Administrative Controls document of 2016 regulate and provide guidance on dredging and disposal activities within the AOC. As discussed under Section 1.2 above, historically, the *Restrictions on Dredging Activities* BUI was used as a means to evaluate and manage contaminated sediment within AOCs. In other words, contaminated sediment was the original driver of the *Restrictions on Dredging Activities* BUI; however, with the creation of the Canada Ontario Sediment Decision Making Framework under the 2002 *Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem* (COA), management of contaminated sediment is achieved separately through an effects-based assessment approach (EC and OMOE, 2008). MECP and ECCC developed a technical memorandum in 1998 for the Steering Committee overseeing the Canada-Ontario Agreement on the Great Lakes, which concluded routine upland disposal for small-scale dredging operations does not constitute a BUI.

The Sault Ste. Marie Region Conservation Authority is the local permitting agency for dredging operations on the Ontario side of the St. Marys River, and disposal options for dredged material are reviewed and accepted by the MECP. As outlined in the St. Marys River Dredging Administrative Controls document, the approval and management of dredging activities and disposal of material involves a number of provincial and federal legislation, and it is consistent across all the Great Lakes, including AOCs. For instance, Transport Canada is one of the agencies involved in the management of navigational dredging, which reviews and authorizes excavation or disposal of fill as per the federal *Navigation Protection Act*. Approvals may also be required from a number of other agencies, including the Ministry of Natural Resources and Forestry who may issue work permits under the provincial *Lakes and Rivers Improvement Act*. In the case of the St. Marys River AOC, the Dredging Administrative Controls document is designed to provide clarity and be used as a guide in the planning and undertaking of any future dredging activities.

Furthermore, the *Restriction on Dredging Activities* BUI was defined before the current provincial guideline that establishes best practices for dredging activities and disposal. There is regulatory oversight for navigational dredging activities taking place in the St. Marys River, consistent with federal and/or provincial environmental protection legislation applicable to all the Great Lakes, including AOCs. Approvals may be required from a number of agencies and the approvals process is consistent throughout Ontario's portion of the Great Lakes, and does not vary in Areas of Concern. All

proponents of dredging projects within the AOC are required to follow the same provincial approvals process as in other non-AOC locations.

5.0 Status of *Restrictions on Dredging Activities* BUI in Sault Ste. Marie, Michigan

The *Restrictions on Dredging Activities* BUI removal on the U.S. side of the St. Marys River AOC became final on November 14, 2017. Members of BPAC reviewed the findings relating to *Restrictions on Dredging Activities* provided by the Michigan Department of Environment, Great Lakes and Energy (EGLE) and supported its recommendation to redesignate the BUI to not impaired on the U.S. side of the AOC Michigan's delisting criteria states the BUI would no longer be considered impaired when:

“During the most recent routine dredging in the U.S. Army Corps of Engineers designated navigational channel, use of a confined disposal facility or TSCA-level landfill for dredge spoils was not required due to chemical contamination” (MDEQ, 2015).

In 2014 and 2015, the COE dredged areas downstream of Sault Ste. Marie, Michigan, within the navigation channel to ensure the safe passage of freighters and cargo. Thirty sites were sampled to assess contaminant levels and to determine appropriate disposal options for the dredgeate. Sample sites were located on the west side of Sugar Island through Nicolet Lake, on the west side of Neebish Island, and near Moon Island at the north end of Munuscong Lake. Results from the sediment assessment confirmed that the dredgeate was uncontaminated and therefore upland placement need not be regulated (Riley, 2017).

6.0 Recommendations and conclusions regarding re-designation

Based on the lines-of-evidence presented in this status report, it is recommended that the *Restrictions on Dredging Activities* BUI in the St. Marys River AOC be re-designated to “not impaired” since the *Restrictions on Dredging Activities* BUI delisting criteria, as endorsed by BPAC, has been fulfilled. This recommendation is based on the following:

- The *St. Marys River Dredging Administrative Controls Document* (2016) has been created to provide guidance and oversight for dredging proponents and permitting agencies in the planning and undertaking of dredging activities.

- The multi-agency Sediment Management Strategy for the St. Marys River AOC is on track to be finalized by March 2020.
- The Dredging Administrative Controls document is a standalone initiative that will continue to guide dredging proponents, but as the delisting criteria states, the dredging guidance it provides will be reflected in the broader Sediment Management Strategy.
- The two dredging-based recommended actions listed in the Stage 2 RAP (Actions NPS-1 and NPS-5) report are underway and are scheduled for completion by March 2020.
- With the creation of the *Canada-Ontario Agreement Respecting the Greats Lakes Basin Ecosystem* (COA), management of contaminated sediment is achieved separately through an effects-based assessment approach.

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9.0 Appendices

9.1 Appendix A – Dredging Administrative Controls Document

[to be inserted as a PDF]

9.2 Summary of Subactions for Action NPS-1

Action NPS-1 includes both short and long term activities ranging from the assessment of immediate remedial options to the implementation of management actions. As such, there are ten sub-actions listed in the Stage 2 RAP report that will support the development of the sediment management strategy, and these sub-actions are summarized below.

i. Sediment mapping of the St. Marys River AOC

The Stage 2 RAP report recommended that sediment mapping in the St. Marys River system be completed showing all significant zones of contaminated sediment. There have been numerous assessments and study reports completed over the past decade focusing on contaminated sediment in the St. Marys River. In order to outline all of the existing data collected within the AOC, ECCC procured services to produce illustrative maps of the study sites. These maps include a historical overview of over 100 sampling sites and results collected by ECCC and MECP since 2002. Maps include those for total sum of polycyclic aromatic hydrocarbons (PAHs)⁵ and for heavy metals⁶ (ie. exceeding the severe effect level (SEL) for arsenic, chromium, copper, iron, lead and nickel).

Status: Complete

ii. Development of a decision-making framework

This sub-action called for the development of a consistent, scientifically defensible, and publicly acceptable decision-making framework that would identify options for remediation and provide a logical basis to guide community-based management decisions on sediment remediation within the AOC. In 2008, the Canada-Ontario Decision-Making Framework for Assessment of Great Lakes Contaminated Sediment was developed by the Sediment Task Team on Behalf of ECCC and MECP. It provides step-by-step science based guidance for assessing risks posed by contaminated sediment. The framework is primarily concerned with risks to the environment but considers human health concerns associated with biomagnification of contaminants. It identifies all possible sediment assessment outcomes based on four lines of evidence (sediment chemistry, toxicity to benthic invertebrates, benthic community structure, and the potential for biomagnification) and provides specific direction on next steps in

⁵ <http://bpac.algomau.ca/wp-content/uploads/2015/10/SMR-sediment-maps-Total-PAH-April-2015.pdf>

⁶ <http://bpac.algomau.ca/wp-content/uploads/2015/10/SMR-sediment-maps-Metals-April-2015.pdf>

making sediment management decisions. In addition, the framework provided a mechanism for identifying contaminated sediments of greatest concern (COA, 2007). The framework has been applied to the St. Marys River and will be used to guide future management decisions.

Status: Complete

iii. Identify suitable management actions

This sub-action deals with identifying suitable management actions that can be incorporated into the final Sediment Management Strategy for the AOC. As stated above on page 9, a new CSM is being developed that will result in one of three potential conclusions to assist with the development of a sediment management plan. If the first conclusion is reached (i.e. sufficient evidence exists to conclude that current conditions in the AOC do not pose a significant risk to human health and/or the environment), no further action will be required. If the second conclusion is reached (i.e. there is insufficient evidence that exists to draw conclusions regarding human health and/or the environment), the CSM will conclude with recommendations for further investigation to support a more detailed and accurate evaluation of risks. If the third conclusion is reached (i.e. there is sufficient evidence to conclude that current conditions pose a significant risk to human health and the environment), the CSM will conclude with recommendations for further investigation to support sediment management options analysis or with the recommendation to proceed with a sediment management options analysis (ECCC, 2018).

Status: Underway

iv. Prevent additional accumulation of contaminants

The Stage 2 RAP report recommended the implementation of a strategy to identify and control all major point and non-point sources of contaminant loadings to sediments within the St. Marys River AOC prior to remediation activities. This is important to prevent additional accumulation of contaminants, and also their re-accumulation following remediation.

The CSM (2012) outlines major historical sources and exposure pathways for contaminants in the sediment of the St. Marys River. These include Algoma Steel (formerly Essar Steel Algoma), St. Marys Paper (decommissioned),

municipal wastewater treatment facilities, and the decommissioned Consumers Energy manufactured gas plant (Michigan) and Tannery Bay/Cannelton Industries Inc. (Michigan). Three of these sites are no longer in operation (ie. St. Marys Paper, Consumers Energy and Cannelton Industries Inc.), and are therefore no longer an ongoing source of contaminants. As for the remaining listed sources, substantial progress has been made in implementing source control measures and through MECP regulation of major point sources. The updated CSM will provide a qualitative review to determine whether contaminant sources may be sufficiently controlled to permit effective sediment management (scheduled for completion by November 2019).

Status: Underway. Expected completion date: March 2020.

v. *Monitoring program for major dischargers*

The Stage 2 RAP report recommended a monitoring program to track water and sediment quality at major discharge points in relation to industry and municipal facilities. Existing monitoring programs are in place and a number of federal and provincial acts and regulations apply to industrial activities. For example, Algoma Steel continually monitors both air and water in accordance with MECP guidelines.

In regards to the municipal facilities, the City of Sault Ste. Marie has completed various stormwater management initiatives. In 2002, the City constructed the Bellevue Park Sanitary Sewer Overflow tank, which mitigates the impact of stormwater infiltration and impacts on the East End Wastewater Treatment Plant (EEWTP). In 2009, the City updated its Sewer Use By-law to prohibit the discharge of stormwater and surface water to the sanitary sewer system. In 2015, a new Storm Water Management Master Plan and Guidelines was approved by City Council. This allows the City to implement a city-wide approach to stormwater management. Although projects are pending the City's budgeting process over the coming years, plans for stormwater management include improving snow disposal sites, education, implementing a point source monitoring plan, implementing oil grit separators, improving stormwater conveyance, and the retrofitting of existing stormwater management facilities for quality control.

Status: Underway

vi. *Monitoring and control during sediment remediation activities.*

There is a need to monitor and control any resuspension of contaminants that may occur during sediment remediation activities. This sub-action is pending and depends on the management actions taken under the Sediment Management Strategy.

Status: Pending

vii. *Track atmospheric inputs*

The Stage 2 RAP report recommended tracking atmospheric inputs of persistent toxic substances to the waters and basin of the St. Marys River. This sub-action is beyond the scope of the AOC and RAP program. Atmospheric inputs are already addressed under a number of other programs such as the Lake Huron Lakewide Action Management Plan, Lake Huron Binational Initiative, and federal and provincial regulations with respect to domestic sources of atmospheric emissions (SMRRAP, 2018).

Status: Not Applicable

viii. *Monitoring and remediation of the Sediment Management Strategy*

Appropriate monitoring of remediation, both short and long-term, is a recommended component of the Sediment Management Strategy. This sub-action is pending and depends on the management actions taken under the Sediment Management Strategy.

Status: Pending

ix. *Incorporate benefits of advancing technology*

The Sediment Management Strategy should incorporate the benefits afforded by advancing technology. For example, remedial actions previously considered necessary but unrealistic, should be initiated once new technology makes them feasible, provided the necessity of these actions is still supported by current monitoring data and decision-making criteria. This sub-action is pending and

depends on the management actions taken under the Sediment Management Strategy.

Status: Pending

x. *Coordinate monitoring and remediation activities with Lake Huron LAMP*

All of the above-mentioned monitoring and remediation activities should be fully coordinated with those of the Lake Huron Lakewide Action and Management Plan (LAMP). This sub-action is pending and depends on the management actions taken under the Sediment Management Strategy.

Status: Pending